

(12) UK Patent Application (19) GB (11) 2 257 307 (13) A

(43) Date of A publication 06.01.1993

(21) Application No 9212912.1

(22) Date of filing 18.06.1992

(30) Priority data

(31) 91000553U (32) 19.06.1991 (33) IT

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(51) INT CL⁶

H05K 5/00, H01F 27/02

(52) UK CL (Edition L)

H1T T1F T12 T8

H1R RBL

U1S S1931 S2058

(56) Documents cited

GB 1209784 A

(58) Field of search

UK CL (Edition K) H1T

INT CL⁶ H01F, H05K

(54) A container for electrical equipment

(57) A container for electrical equipment, for example for mounting transformers in light fittings, comprises a base portion (6) having a coupling stem (33), a body portion (4) with a first part for housing the electrical equipment and a second part (11) for accommodating the coupling stem (33), and a cover portion (5) having resilient clip means (20) adapted to releasably attach the cover portion to the body portion and further having fixing means for holding electrical components and/or cables. A cap (7) may be fitted over the cover portion (5) and a single screw (41) can be used to couple the cap, the cover and the body portions to the base portion which may already be fixed to a lamp base or a wall.

The container accommodates the electrical equipment in a dust proof and splash proof manner and provides protection for the terminals of the equipment.

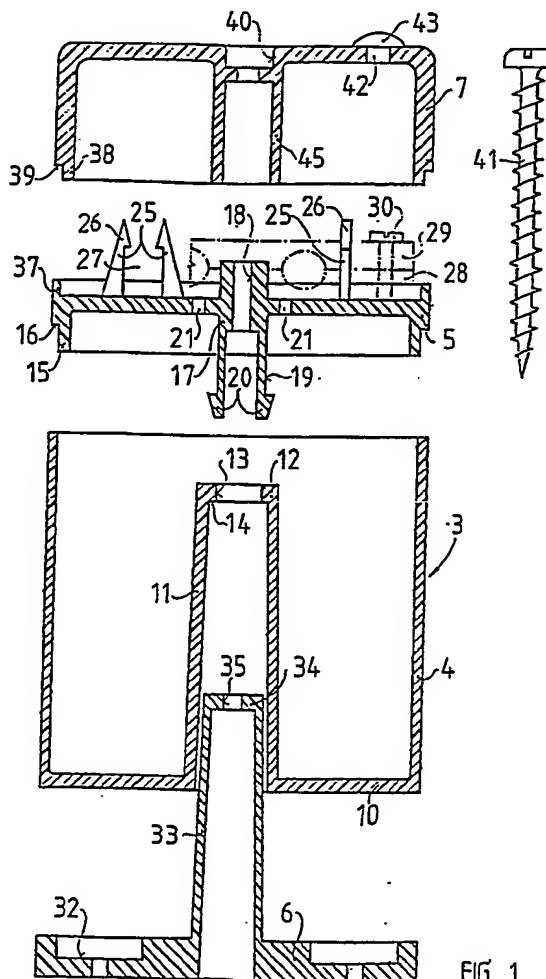


FIG. 1

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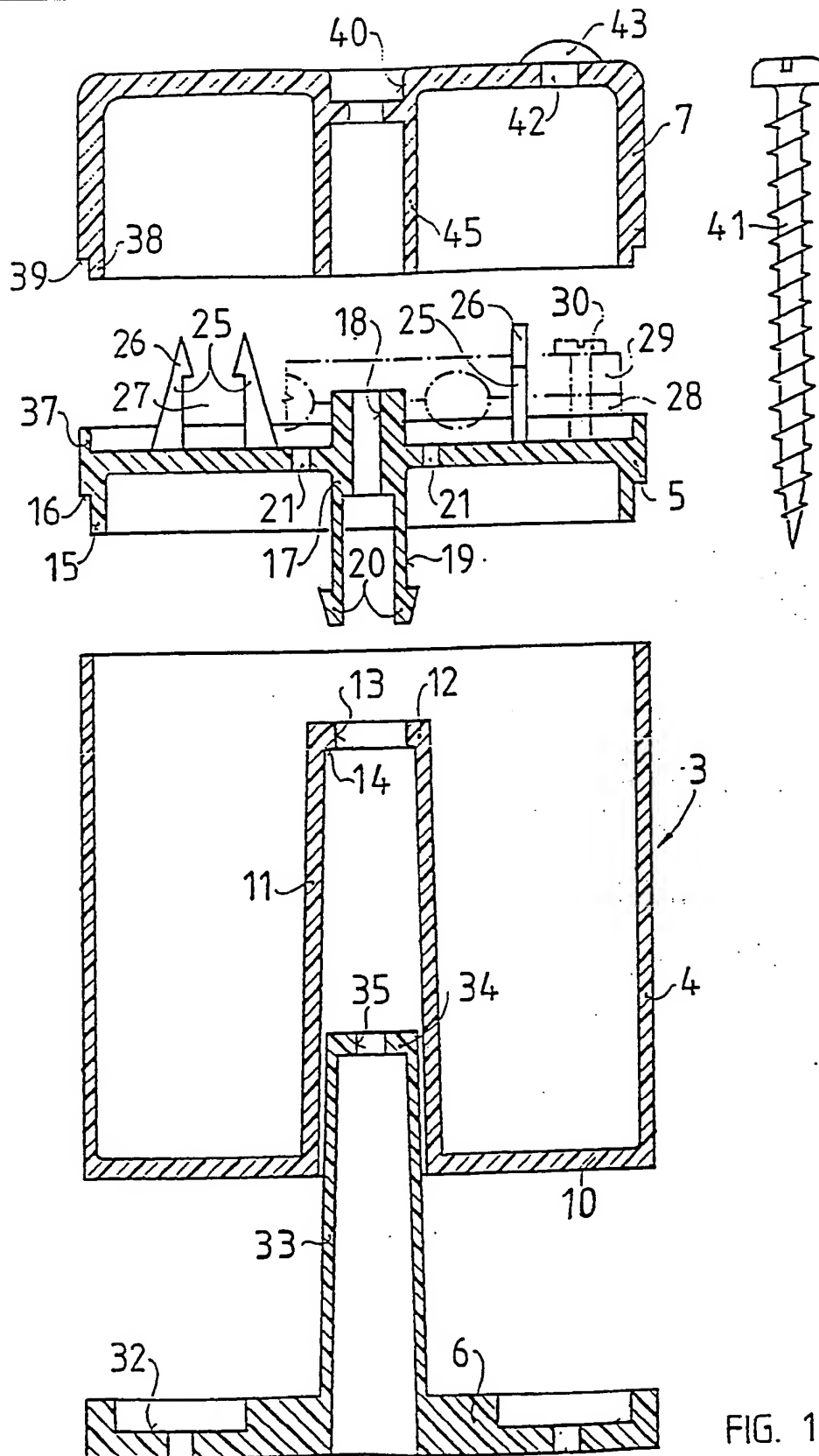


FIG. 1

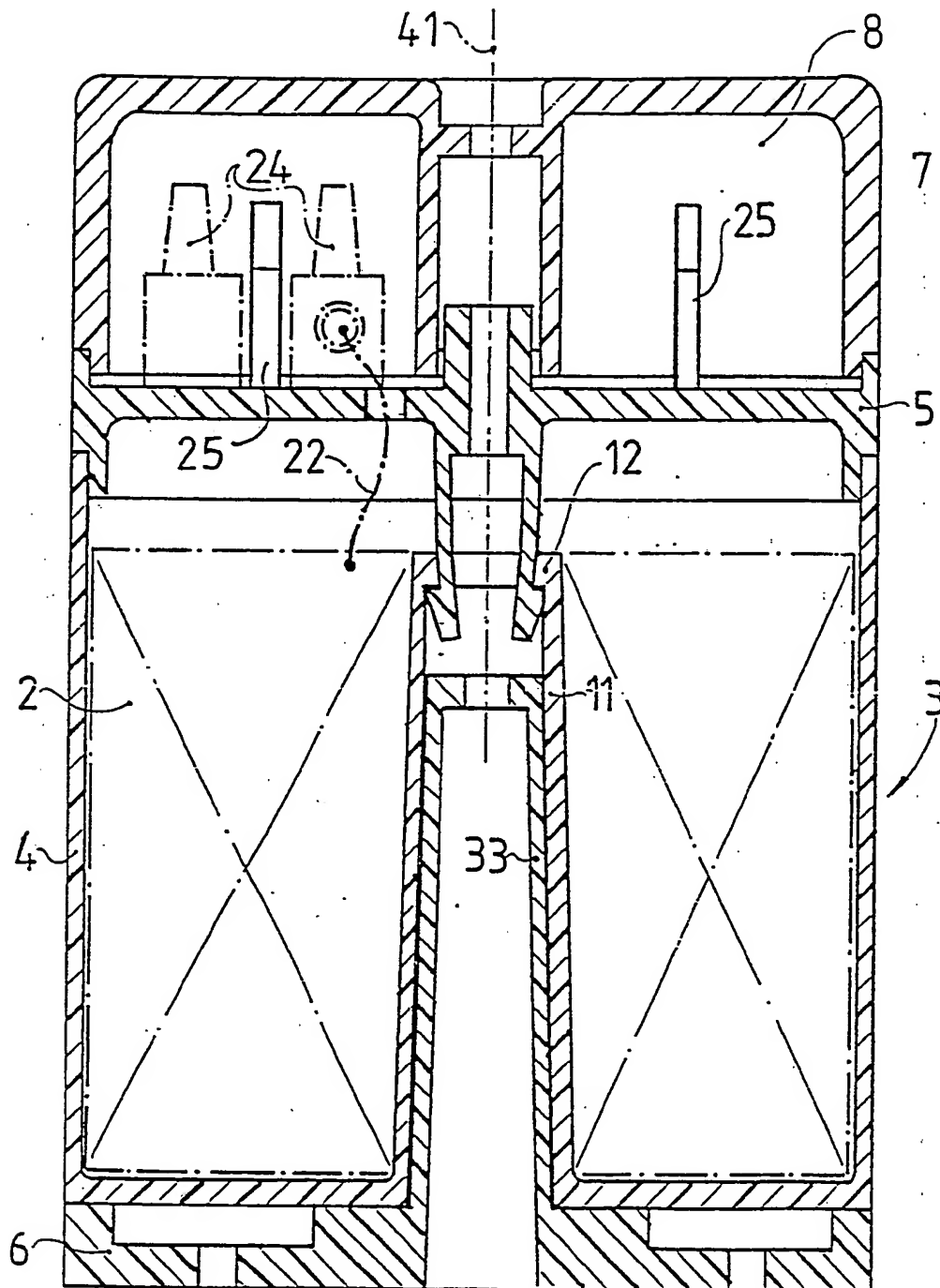


FIG. 2

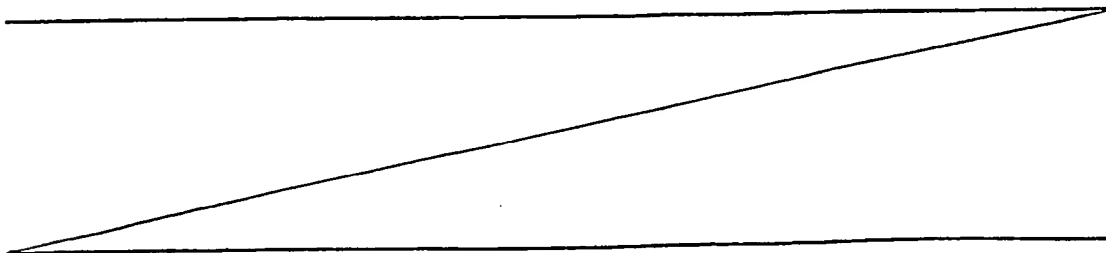
A MOUNTING CONTAINER FOR ELECTRICAL EQUIPMENT
DESCRIPTION

The present invention relates to a mounting container for electrical equipment.

The electrical equipment which can be housed in the mounting containers, which are the subject of the invention may, for instance consist of transformer for civil installations, for example for low voltage lighting equipment and lamps. These transformers have for example a torroidal magnetic core with primary and secondary windings, or one winding in the case of an auto-transformer, and are fixed for example to a wall or to a base of a lamp by fixing supports. The known mounting supports consist of brackets which can be fixed by means of screws and washers.

With the known mounting supports, the electrical equipment, for example the transformers, are exposed to the action of dirt and damp. The wiring terminals are freely accessible and require their own insulation. This increases installation time and costs.

According to one aspect of the invention, there is provided a container for electrical equipment comprising a base portion having a coupling stem, a body portion having a first part for housing electrical equipment and a second part shaped to accommodate the coupling stem and a cover portion having clip means adapted to releasably attach the cover portion to the body portion and further having fixing means for holding electrical components and/or cables.



The object on which the invention is based is to create a mounting container for electrical equipment which allows accommodation of the electrical equipment in a dust-proof and splash-proof manner, rapid wiring and a protected accommodation of the connecting terminals, along with extremely stable mounting.

According to the invention, this problem is resolved by the fact that the mounting container comprises a cup-shaped body housing the electrical equipment and having in the bottom a hollow extension which extends inwardly and which can be coupled to a coupling stem of a mounting plate and in that the cup-shaped body can be closed by a cover which on the inside has resilient clips for geometrical and releasable assembly, with a seating provided in the hollow extension of the cup-shaped body, and in that on its outer surface the cover has means of fixing electrical components and cables and in that a protective cap is provided which can be fitted to the cover.

The result is easy assembly and rapid fixing of the components of the container by a single fixing means, due to the fact that the cover of the protective cap comprises a central hollow boss, the bosses being adapted to receive a clamping screw which can be screwed into the coupling stem of the plate.

It is possible conveniently to assemble the cover and the cup-shaped body without the use of additional parts and with a simple design of locking clips, while at the same time the production moulds are simplified by the fact that there are provided in the cover two oppositely acting hooks which engage a shoulder provided in the bottom of the hollow extension of the cup-shaped body.

Providing in the cover and in the protective cap holes through which electricity conductors can pass further

facilitates the operations of accommodating and wiring the electrical equipment and components. The electricity conductors and connecting terminals are easily fixed which in turn renders wiring easier and more oxidisable (sic!), due to the fact that the fixing means provided for the electrical components and cables on the cover consist respectively of two oppositely disposed hook-shaped tabs accommodating groups of connecting terminals and a U-bolt for locking the supply and outlet cables. Such fixing means are of extremely limited bulk and therefore mean that greater space is available, so that the wiring operations can be carried out comfortably. The electrical components are effectively protected in a sealing-tight manner by virtue of the fact that the cover is in turn enclosed on its outer surface by the protective cap.

Advantageously, this results in a particularly stable assembly, with dynamic and vibration-free connections, for example in the case of transformers, due to the fact that the hollow extension of the cup-shaped body and the coupling stem on the mounting plate are of frusto-conical shape.

An extremely simple, economical and electrically insulating product is obtained by reason of the fact that all the parts of the mounting container consist of synthetic material.

The overall shape has no projecting parts, which facilitates installation, for example in the box-shaped bottom portions of floor and table-mounted lamps, since all the parts of the mounting container are of circular cross-section of normal outside diameter.

The advantage which can be achieved by the mounting container according to the invention resides in the simple and rapid axial assembly of the various components and the use of one single locking screw. Coupling between the

cup-shaped body and the fixing plate, by means of a forced geometrical coupling which can be secured by one axial locking screw cuts out vibrations and therefore guarantees extremely silent operation of the electrical equipment.

An embodiment of a mounting container for electrical equipment in accordance with the invention is described hereinafter, with reference to the attached drawings in which:

Fig.1 shows a longitudinal section through the components of the mounting container in an exploded view, and Fig.2 shows a longitudinal section through the mounting container in the assembled state.

Reference numeral 1 in Fig. 2 indicates in its entirety a unit consisting of a mounting container 3 and an electrical appliance 2, for example a torroidal transformer.

The mounting container consists of a cup-shaped body 4 with a cover 5, a fixing plate 6 and a cap 7 which, together with the cover 5, defines a chamber 8 (Fig. 2) which accommodates wiring components, for example terminals 24 and possibly other circuit components, not shown.

More particularly, the cup-shaped body 4 has in the bottom 10 a hollow axial extension 11 which extends into the interior of the body 4 and has in the bottom 12 a seat formed by a bore 13 and an annular shoulder 14. All the components 7, 5, 4 and 6 which form the mounting container 3 are, in the embodiment illustrated, of circular cross-section and are preferably constructed as parts moulded from synthetic material, and all have the same outside diameter. The cup-shaped body 4 can be closed at the top

by the cover 5 which, in the example illustrated, comprises a coupling ring 15 which forms an annular shoulder 16. In the bottom part of a boss 17 comprising

an axial bore 18 there are resilient clips 19. Provided in the example illustrated are two oppositely acting tabs 19 with one end 20 which is shaped like a hook. Provided in the cover 5 are through bores 21 allowing passage of the ends of the windings to be connected to the electricity supply and discharge conductors. One of the ends of a winding is identified by reference numeral 22 in Fig. 2. Wiring is preferably carried out by means of conventional strip-like terminals. Two terminals 24 are represented by dash-dotted lines in Fig. 2. For the purpose, terminal supporting means are provided on the cover 5. In the embodiment shown, the terminal supporting means consist of two pairs of tabs 25. As can be ascertained from the pair of tabs shown in Fig. 1, rotated through 90°, on the left-hand half of the cover 5, the tabs 25 are mutually facing, spaced apart and have at the top a hook-shape 26 with a shoulder defining a chamber 27 for housing the bridge member, not shown, which connects two adjacent terminals 24. Also provided on the cover 5 is a rib 28 for receiving a U-bolt 29 which is known per se as a means of securing inlet and outlet cables, not shown. The U-bolt 29 can be fixed on the rib 28 in known manner by end screws 30. The fixing plate 6 has two or more recesses with through-bores 32 to allow screw fixing, not shown, for example to a wall or to a base of a lamp, not shown. The plate 6 has a coupling stem 33 which can be housed in the hollow extension 13 within the cup-shaped body 4. The stem 33 and the hollow extension 11 can be coupled preferably by geometrical and dynamic engagement. For this purpose, the stem 33 and the hollow extension 11 are for example of frustoconical shape. In the upper wall 34 of the hollow stem 33 there is a bore 35.

For convenience of access to the wiring terminals 24 and to the cable-securing member 29, the cover 5 has at the

top an annular ring 37 of limited height, for example 2 to 3 mm. The chamber 8 which houses and protects the wiring components and any other circuit components, not shown, is then defined by the maximum part of the cup-shape of the cap 7. The cap 7 has a coupling ring 38 with a shoulder 39 and has in the centre a hollow boss 45 with a seat 40 to accommodate a locking screw 41. Identified by reference numeral 42 is one of the two through bores provided for the electricity supply cable and for the outlet cable, not shown. The bores 42 may be closed by a removable plug 43.

The assembly and fixing of the mounting container 3 according to the invention takes place as follows:

After insertion of the electrical equipment, in the embodiment illustrated this is a torroidal transformer 2, into the cup-shaped body 4, the winding ends 22 are caused to pass through the bores 21 in the cover 5 and the hook-shaped tabs 19 on the cover 3 are inserted through the bore 13 in the body 4. When the shoulder 16 is resting on the top edge of the body 4, the hook-shaped ends 20 emerge from the bore 13 and widen out resiliently under the annular shoulder 14, locking the disc 5 on the body 4. The supply and outlet cables are fixed by means of the U-bolt 29 and their ends, together with the ends of the windings, are fixed in the terminals 24 previously inserted and locked in removable manner between the oppositely facing tabs 25. When the wiring is completed, the cap 7 is fitted onto the cover 5 and the body 4 is fitted onto the stem 33 on the plate 6 which is already fixed to the wall, lamp base or the like. Fixing of the cap 7 and locking of the body 4 on the plate 6 take place at the same time by means of the fixing screw 41 which, in the embodiment illustrated, is self-tapping in the bore 35 in the stem 33. Alternatively, it would also be possible

to house in the stem 33 a nut to receive the screw 41. It would also be possible to provide on the cover 5 an annular ring 37 extending beyond the electrical connecting terminals 24 and a disc-shaped closure cap. However, this would mean that the wiring operations would be less easily performed. If, as illustrated, a chamber 8 is provided to accommodate and protect the wiring components 24 and 29 and any other circuit components, it would also be possible to dispense with fixing of the terminals on the cover.

CLAIMS

1. A mounting container for electrical equipment, particularly for torroidal transformers, characterised in that it comprises a cup-shaped body accommodating the electrical equipment and having in the bottom a hollow extension which extends into the interior and which can be coupled to a coupling stem on a mounting plate, and in that the cup-shaped body can be closed by a cover which on the inside has resilient clips which can be removably assembled by being geometrically coupled together with a seating provided in the hollow extension of the cup-shaped body and in that the cover has on its outer surface fixing means for electrical components and cables, and in that a protective cap is provided which can be assembled together with the cover.

2. A mounting container according to claim 1, characterised in that the cover and the protective cap comprise a central boss which is hollow and in that the bosses accommodate a clamping screw which can be screwed into the coupling stem of the plate.

3. A mounting container according to claim 1 or 2, characterised in that provided in the cover are two oppositely facing clips adapted to be removably accommodated in a cavity provided in the bottom of the hollow extension of the cup-shaped body.

4. A mounting container according to claim 1, 2 or 3, characterised in that the cover and the protective cap comprise bores for the electrical conductors.

5. A mounting container according to any preceding claim, characterised in that the means of fixing components and electric cables on the cover consist of respectively two oppositely facing tabs which are hook-shaped and which accommodate connecting terminal assemblies and a U-bolt for securing the supply and outlet cables.

6. A mounting container according to any preceding claim, characterised in that the extension of the cup-shaped

~~body and the coupling stem on the fixing plate are of~~
frustoconical shape.

7. A mounting container according to any preceding claim, characterised in that all the components of the mounting container consist of parts which are moulded from synthetic material.

8. A mounting container according to any preceding claim, characterised in that all the components of the mounting container have the same outside diameter.

9. A container for electrical equipment comprising a base portion having a coupling stem, a body portion having a first part for housing electrical equipment and a second part shaped to accommodate the coupling stem and a cover portion having clip means adapted to releasably attach the cover portion to the body portion and further having fixing means for holding electrical components and/or cables.

10. A mounting container substantially as hereinbefore described with reference to the accompanying drawings.

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Patents Act 1977
Examiner's report to the Comptroller under
Section 17 (The Search Report)

Application number

GB 9212912.1

Relevant Technical fields

(i) UK CI (Edition K) H1T

(ii) Int CI (Edition 5) H01F
H05K

Databases (see over)

(i) UK Patent Office

(ii)

Search Examiner

P CORBETT

Date of Search

29 SEPTEMBER 1992

Documents considered relevant following a search in respect of claims

1-10

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
A	GB 1209784 (ESQUIRE)	

SF2(p)

HCS - doc99\fil000363



17. Nov. 2003

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Category	Identity of document and relevant passages	Relevant to claim(s)

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